

**Remarks:**

Claims 1, 9, 30, 34, 50, 52, 53, 55, 56, 58 and 62 have been amended. Claim 51 has been cancelled without prejudice. New claims 63-68 have been added. Claims 1-50 and 52-59 remain in the application.

**§112 Rejections**

Claims 51-56 stand rejected under §112, First Paragraph, as not providing enablement for "the reaction product of a blend of isocyanate and additional isocyanate quasi-prepolymer reacted with blend (b)." Claim 50 has been amended to recite "isocyanate quasi-prepolymer," similar to the recitations of the other pending claims. Applicant has cancelled claim 51, and has amended claims 52, 55, and 56 to depend from claim 50 rather than claim 51. The §112 issues are believed to be resolved, and withdrawal of the rejections is respectfully requested.

Claims 30-31, 45-47, 49, 53-54, 58-59, and 61-62 stand rejected as indefinite. Claim 30 has been amended to depend from claim 27, rather than claim 9. As amended, there is antecedent basis in the claim for the limitation: "said amine-terminated chain extenders" in line 1, and withdrawal of the rejection is respectfully requested. Claim 31 depends from claim 30, and accordingly, withdrawal of the rejection thereto is also respectfully requested.

The Examiner states that claim 40 recites the limitation "said amine terminated chain extenders" in line 1, and lacks antecedent basis for the limitation. Claim 40 is reproduced below:

The composition of claim 34 wherein at least 70 percent of the active hydrogen groups in the reaction mixture are in the form of amine groups.

It is unclear to which claim the Examiner intended to refer (if any), however, claim 40 does not recite the language deemed problematic, and withdrawal of the rejection is therefore respectfully requested.

Claims 58-59 stand rejected on the grounds that the limitation "said amine-terminated polyether resins" in line 1 do not have sufficient antecedent basis. Applicant has amended claim 58 to recite "active amine hydrogen containing materials," rather than the "amine-terminated polyether resins." Claim 58 depends from claim 57, which provides antecedent basis (amine-terminated polyols) for the claim terms added to claim 58 by the present amendment. Claim 59 depends from claim 58, and accordingly, the withdrawal of the rejections to both claims 58 and 59 is respectfully requested.

Claims 61 and 62 stand rejected on the grounds that the limitation "said elastomeric coating" in lines 1 and 2, respectively, of both claims does not have sufficient antecedent basis. Applicant has deleted the term "elastomeric" preceding "coating" in both claims 61 and 62, rectifying the antecedent basis problem. The "coating" referred to is originally set forth in independent claim 50, from which claims 61 and 62 depend.

Regarding claim 53, the Examiner states that it is unclear which components are intended to be limited by the equivalent weight limitation of "at least about 500." Applicant has amended claim 53 to place the equivalent weight limitation after the recitation of all the components, and any problems underlying the rejection are believed overcome, and withdrawal of the same is respectfully requested.

The Examiner states that claims 30 and 45 are improper Markush claims. Both claims have been amended to recite closed language, in accordance with the Examiner's suggestion. Withdrawal of the rejections thereto is respectfully requested.

### **§103 Rejections**

Claims 1-6, 9-12, 14, 16-22, 24-25, 27-29, 32-34, 36-37, 39, 42-46, 48-53, 55-58, and 60-62 stand rejected as unpatentable under §103 in view of Bock et al. At paragraph 13 of the March 31, 2003 Office Action, the Examiner states "it would have been prima facie obvious to use phenol formaldehyde in the exemplified coating compositions as the polyether component in the expectancy of a coating having equally improved low viscosity, long term flexibility, overbaking resistance, adhesion to electrocoated sheet metal, and shelf life. Applicant has amended claim 1 to better emphasize the scope of the invention, and the rejection is therefore overcome.

In particular, claim 1 recites the added limitation: "wherein curing of the copolymer coating system is initiated upon mixing of the (a) component and the (b) component, said components thereby gelling in less than about 30 seconds." This added limitation emphasizes Applicant's development of a coating system significantly different from that set forth in Bock. Bock is directed to compositions that are to be applied to a substrate, then baked or otherwise heated to cure the coating (Abstract; Col. 9). Furthermore, the Bock compositions are intended to be stored for long periods of time in a mixed, uncured state (Col. 8, lines 63-67). Thus, Bock teaches away from a composition wherein curing is initiated upon mixing of the components. Applicant's invention is a two-component system, and differs from Bock and similar systems in that

the cure is initiated upon *mixing* the respective components, and can take place in the absence of heat or catalysts. The fast cure is possible because of the discovery and selection of appropriate components for the reaction. In Applicant's specification, at page 12, lines 13-15, this advantage is set forth:

The fast cure time of the systems of the present invention will allow for rapid turn around time for the coating/application work.

Applicant has further limited the invention of claim 1 to a system wherein the cure reaches a gel stage in less than about 30 seconds. Rapid gel time, and the ability to cure without heating or other processing represent substantial improvements over the related polyurea art. In contrast to Applicants' invention, the Bock composition is applied to a substrate, then heated to cure the coating. The requirement of post-application heating renders Bock poorly suited for applications such as large structures or in outdoor environments. Bock does not disclose all the limitations of claim 1. Further, there is no suggestion in Bock to make the modifications necessary to arrive at the invention of claim 1.

The Examiner contends that the disclosed possibility of using phenol formaldehyde condensates as isocyanate-reactive compounds in the reaction mixture renders Applicant's invention obvious. To establish a prima facie case of obviousness, it is essential that the Examiner provide some motivation or suggestion to make the claimed invention in light of the prior art teachings. The Examiner has pointed to no part of the Bock disclosure, nor knowledge in the art generally, that would teach or suggest use of phenolic resins in a fast-cure, two-component polyurea system such as that set forth in

claim 1. If anything, Bock suggests that such a formulation would be ineffective in a plural component system, and teaches away. The Bock compositions are concocted from their component parts, then left to sit ("shelf life") until ready to apply to a substrate. While phenolics have long been known to impart desirable properties when incorporated into elastomers, conventional knowledge in the polyurea art has heretofore been that phenolic resins were not sufficiently reactive with isocyanates to be incorporated into the polyurea backbone in fast-cure, plural component systems. Applicants' successful incorporation of phenolic resins into a plural component system thus fulfilled a long felt need in light of conventional wisdom in the art. Accordingly, the rejection to claim 1 is overcome, and withdrawal of the same is respectfully requested. Claims 2-8 depend from claim 1, and the rejections thereto are therefore also overcome, and withdrawal of the same is respectfully requested.

Claim 9 has been amended in a fashion similar to claim 1, however, the limitation regarding gel time of the composition is omitted. Amended claim 9 thus includes the additional limitation: "wherein curing of the co-polymer coating system is initiated upon mixing of the (a) component and the (b) component." As described with respect to claim 1, the Bock compositions are prepared from their components and stored in an uncured state (Col. 8, lines 63-67). Accordingly, the rejections to claim 9 are overcome for reasons similar to those expressed with respect to claim 1, and reference is made specifically thereto. Claims 10-12, 14, 16-22, 24-25, 27-29, and 32 depend from claim 9, and the rejections thereto are overcome as well.

Claim 34 has been amended to recite the following additional step in the claimed process:

(c) applying the (a) and (b) components to a substrate and allowing said components to cure thereon, wherein said components cure without additional heating.

As amended, claim 34 requires that the components cure without additional heating. It is implicit in Applicant's disclosure that application and curing of the claimed composition on large, outdoor structures is achieved without heating the composition after application thereon. The rejection is therefore overcome, and withdrawal of the same is respectfully requested. Likewise, the rejections to claims 36-37, 39, 42-46, 48-49, all dependent from claim 34, are overcome, and withdrawal of the same is respectfully requested.

Claim 50 has been amended to recite in the preamble that the substrate is coated with a "two-component" phenolic / polyurea co-polymer coating. As described with respect to claim 1, Bock teaches only a one-component composition. As is well known in the polyurea art, one-component compositions generally require the aid of a catalyst, heat, moisture or some other means for curing the composition once applied to the desired substrate. Further, claim 50 has been amended to recite the additional limitation: "wherein said (a) and said (b) components are mixed just prior to application to the substrate and allowed to cure thereon." This limitation of the process whereby the coating composition is applied to the substrate is not taught by Bock. In fact, Bock teaches a composition wherein the coating composition is formulated for long term storage. To the extent it might be argued that Bock discloses plural components, they are plainly not mixed "just prior" to application to the substrate. Applicant's invention of claim 50, because it comprises two components that are sufficiently reactive that upon mixing

rapidly begin to cure, offers significant advantages that are not apparent in view of the teachings of Bock or in the art generally. The rejection to claims 50-53, 55-58, and 60-62 are therefore overcome, and withdrawal of the same is respectfully requested.

Claims 7 and 30 are rejected under §103 as being unpatentable over Bock et al. in view of Rice et al. Because the base claims from which claims 7 and 30 depend, claims 1 and 9, respectively, are distinguishable over the cited art as set forth above, the rejections are overcome, and withdrawal of the same is respectfully requested.

Claims 13, 30-31, 38, and 54 are rejected under §103 as being unpatentable over Bock et al. in view of Primeaux, II. The claims from which claims 13, 30-31, 38, and 54 depend are all believed to be distinguishable over the cited art, as set forth above, the rejection is therefore overcome, and withdrawal of the same is respectfully requested.

Claims 8, 23, and 35 are rejected under §103 as being unpatentable over Bock et al. in view of Finelli. The claims from which claims 8, 23, and 35 depend are all believed to be distinguishable over the cited art, as set forth above, the rejection is overcome, and withdrawal of the same is respectfully requested.

Applicant has also submitted new claims 63-68. In general, the new claims track the originally submitted claims that the Examiner has indicated would be allowable if rewritten in independent form to include all of the limitations of the base claim and intervening claims, specifically claims 15, 26, 40-41, 47, and 59. In addition, claims 47 and 59 have been rewritten to overcome the §112 issues. Applicant has made minor departures from the original language of the claims at several points, however, the claims are believed to be consistent with the Examiner's stated reasons for allowance.

WHEREFORE, all the submitted claims are believed to be in condition for allowance, which is respectfully requested. If the Applicant may be of any further assistance in the prosecution of this application in any way, the Examiner is invited to contact the undersigned at (248) 364-2100.

Respectfully submitted,

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